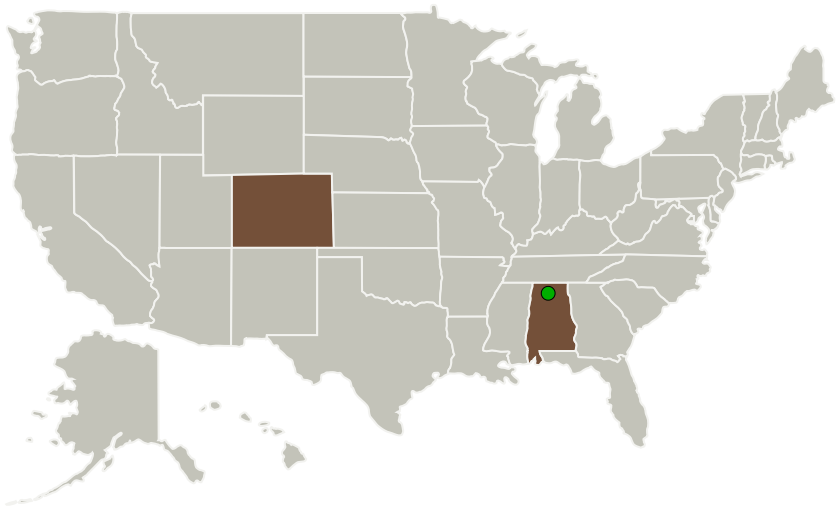
High Fidelity, High Volume Agglutinate Manufacturing Process, Phase I

Completed Technology Project (2010 - 2010)

Project Introduction

Up to 65% of the lunar soils are comprised of agglutinates. Although the importance of agglutinate in simulants is often debated, the fact is that agglutinates account for a large portion of the lunar soil and have known effects on final material properties. Increasing the fidelity of terrestrially manufactured simulant can reduce mission risk. Zybek Advanced Products, Inc., is proposing an important innovation to the agglutinate manufacturing process to address mission-critical needs for lunar regolith simulants that achieve NASA's cost and quantity objectives, provide reproducible production processes, and supply required particle size distributions. Additional value is provided to the program by ZAP's unique knowledge of simulant mechanical and material properties gleaned from its production of simulant components for NASA. The majority of ZAP's work completed to date has been focused on high volume, bulk lunar simulant components, including glass, agglutinates and melt breccias. The primary purpose of this SBIR proposal is to innovate the agglutinate manufacturing process to provide significantly higher quality material that will contain nanostructure Fe0. This innovation will leverage ZAP's current investment in the high-volume simulant manufacturing and provide the industry with more accurate simulants that will reduce future mission risks.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Zybek Advanced Products, Inc.	Lead Organization	Industry	Boulder, Colorado
Marshall Space Flight Center(MSFC)	Supporting Organization	NASA Center	Huntsville, Alabama

Primary U.S. Work Locations	
Alabama	Colorado

Project Transitions

January 2010: Project Start

July 2010: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/140648)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Zybek Advanced Products, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

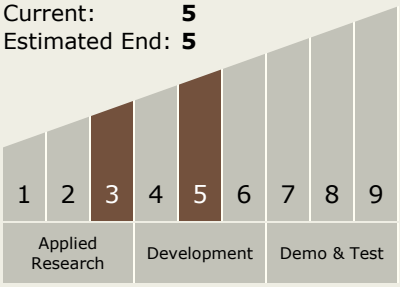
Carlos Torrez

Principal Investigator:

Michael Weinstein

Technology Maturity (TRL)

Start: **3**
Current: **5**
Estimated End: **5**



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Technology Areas

Primary:

- TX07 Exploration Destination Systems
  - TX07.1 In-Situ Resource Utilization
    - TX07.1.4 Resource Processing for Production of Manufacturing, Construction, and Energy Storage Feedstock Materials

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System